

FORM PTO-1449  
(Modified)U.S. Department of Commerce  
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Attorney Docket No.: COOL-01400

Serial No.: 10/612,241

INFORMATION DISCLOSURE STATEMENT BY APPLICANT  
(Use Several Sheets if Necessary)

Applicants: James Lovette et al.

Filing Date: July 1, 2003

Group Art Unit: 3743

(37 CFR § 1.98(b))

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## U.S. PATENT DOCUMENTS

Examiner Initials		Serial Patent Number	Issue Date	Applicant / Patentee	Class	Subclass	Filing Date
TD	AA	6,632,719 B1	10/14/03	DeBoer et al.	438	381	08/31/00
	AB						
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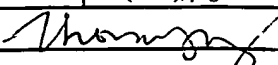
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EXAMINER:

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OTHER DOCUMENTS (Including Author, Title, Date, Relevant Pages, Place of Publication)							
TD	AA	Stephen C. Jacobson et al., "Fused Quartz Substrates for Microchip Electrophoresis", Analytical Chemistry, Vol. 67, No. 13, July 1, 1995, pages 2059-2063.					
TD	AB	Kendra V. Sharp et al., "Liquid Flows in Microchannels", 2002, Vol. 6, pages 6-1 to 6-38.					
TD	AC	Shuchi Shoji et al., "Microflow devices and systems", J. Microelect. Microeng. 4 (1994), pages 157-171, printed in the U.K.					
TD	AD	Angela Rasmussen et al., "Fabrication Techniques to Realize CMOS-Compatible Microfluidic Microchannels", Journal of Microelectromechanical, Vol. 10, No. 2, June 2001, pages 286-297.					
TD	AE	Gad Hetroni et al., "Nonuniform Temperature Distribution in Electronic Devices Cooled by Flow in Parallel Microchannels", IEEE Transactions on Components and Packaging Technologies, March 2001, Vol. 24, No. 1, pages 16-23.					
TD	AF	X. F. Peng et al., "Heat Transfer Characteristics of Water Flowing through Microchannels", Experimental Heat Transfer An International Journal, Vol. 7, No. 4, October-December 1994, pages 265-283.					
TD	AG	Linan Jiang et al., "Forced Convection Boiling in a Microchannel Heat Sink", Journal of Microelectromechanical Systems, Vol. 10, No. 1, March 2001, pages 80-87.					
TD	AH	Muhammad M. Rahman et al., "Experimental Measurements of Fluid Flow and Heat Transfer in Microchannel Cooling Passages in a Chip Substrate", 1993, EEP-Vol. 4-2, Advances in Electronic Packages, pages 685-692.					
TD	AI	X. F. Peng et al., "Forced convection and flow boiling heat transfer for liquid flowing through Microchannels", 1993, Int. J. Heat Mass Transfer, Vol. 36, No. 14, pages 3421-3427.					
TD	AJ	Lung-Jieh Yang et al., "A Micro Fluidic System of Micro Channels with On-Site Sensors by Silicon Bulk Micromaching", September 1999, Microfluidic Devices and Systems II, Vol. 3877, pages 267-272.					
TD	AK	G. Mohiuddin Mala et al., "Heat transfer and fluid flow in microchannels", 1997, Int. J. Mass transfer, Vol. 40, No. 13, pages 3079-3088, printed in Great Britain.					
TD	AL	J. M. Cuta et al., "Fabrication and Testing of Micro-Channel Heat Exchangers", SPIE Microlithography and Metrology in Micromaching, Vol. 2640, 1995, pages 152-160.					
TD	AM	Linan Jiang et al., "A Micro-Channel Heat Sink with Integrated Temperature Sensors for Phase Transition Study", 1999, 12 <sup>th</sup> IEEE International Conference on Micro Electro Mechanical Systems, pages 159-164.					
TD	AN	Linan Jiang et al., "Fabrication and characterization of a microsystem for a micro-scale heat transfer study", J. Micromech. Microeng. 9 (1999) pages 422-428, printed in the U.K.					
TD	AO	M. B. Bowers et al., "High flux boiling in low flow rate, low pressure drop mini-channel and micro-channel heat sinks", 1994, Int. J. Heat Mass Transfer, Vol. 37, No. 2, pages 321-332.					
TD	AP	Yongendra Joshi, "Heat out of small packages", December 2001, Mechanical Engineer, pages 56-58.					
TD	AQ	A. Rostami et al., "Liquid Flow and Heat Transfer in Microchannels: a Review", 2000, Heat and Technology, Vol. 18, No. 2, pages 59-68.					
TD	AR	Lian Zhang et al., "Measurements and Modeling of Two-Phase Flow in Microchannels with Nearly Constant Heat Flux Boundary Conditions", Journal of Microelectromechanical Systems, Vol. 11, No. 1, February 2002, pages 12-19.					
TD	AS	Muhammad Mustafizur Rahman, "Measurements of Heat Transfer in Microchannel Heat Sinks", Int. Comm. Heat Mass Transfer, Vol. 27, No. 4, May 2000, pages 495-506.					
TD	AT	Issam Mudawar et al., "Enhancement of Critical Heat Flux from High Power Microelectronic Heat Sources in a Flow Channel", Journal of Electronic Packaging, September 1990, Vol. 112, pages 241-248.					
TD	AU	Nelson Kuan, "Experimental Evaluation of Micro Heat Exchangers Fabricated in Silicon", 1996, HTD-Vol. 331, National Heat Transfer Conference, Vol. 9, pages 131-136.					
TD	AV	E. W. Kreutz et al., "Simulation of micro-channel heat sinks for optoelectronic microsystems", Microelectronics Journal 31(2000) pages 787-790.					
TD	AW	J. C. Y. Koh et al., "Heat Transfer of Microstructure for Integrated Circuits", 1986, Int. Comm. Heat Mass Transfer, Vol. 13, pages 89-98.					
TD	AX	Snezana Konecni et al., "Convection Cooling of Microelectronic Chips", 1992, InterSociety Conference on Thermal Phenomena, pages 138-144.					
TD	AY	Michael B. Kleiner et al., "High Performance Forced Air Cooling Scheme Employing Microchannel Heat Exchangers", 1995, IEEE Transactions on Components, Packaging, and Manufacturing Technology-Part A, Vol. 18, No. 4, pages 795-804.					
TD	AZ	Jerry K. Keska Ph. D. et al., "An Experimental Study on an Enhanced Microchannel Heat Sink for Microelectronics Applications", EEP-Vol. 26-2, Advances in Electronic Packaging, 1999, Vol. 2, pages 1235-1259.					
TD	BA	Shung-Wen Kang et al., "The Performance Test and Analysis of Silicon-Based Microchannel Heat Sink", July 1999, Terahertz and Gigahertz Photonics, Vol. 3795, pages 259-270.					
Examiner: <i>Thayer</i>				Date Considered: 8/21/06			
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TD	BB	Joseph C. Tramontana, "Semiconductor Laser Body Heat Sink", Xerox Disclosure Journal, Vol. 10, No. 6, November/December 1985, pages 379-381.			
TD	BC	Sarah Arulanandam et al., "Liquid transport in rectangular microchannels by electroosmotic pumping", Colloid and Surfaces A: Physicochemical and Engineering Aspects 161 (2000), pages 89-102.			
TD	BD	Jeffery D. Barner et al., "Thermal Ink Jet Print Head Carriage with Integral Liquid Cooling Capabilities", Xerox Disclosure Journal-Vol. 21, No. 1, January/February 1996, pages 33-34.			
TD	BE	"Autonomous displacement of a solution in a microchannel by another solution", Research Disclosure, June 2001, pages 1046-1047.			
TD	BF	John M. Waldvogel, "Aluminum Silicon Carbide Phase Change Heat Spreader", Motorola, June 1999, Technical Developments, pages 226-230.			
TD	BG	James P. Slupe et al., "An idea for maintaining a stable thermal environment for electronic devices", Research Disclosure, August 2001, page 1312.			
TD	BH	John M. Waldvogel, "A Heat Transfer Enhancement Method for Forced Convection Bonded-Fin Heatsinks", Motorola, December 1997, Technical Developments, pages 158-159.			
TD	BI	"Thin Heat Pipe for Cooling Components on Printed Circuit Boards", IBM Technical Disclosure Bulletin, Vol. 34, No. 7B, December 1991, pages 321-322.			
TD	BJ	"Integrally Grooved Semiconductor Chip and Heat Sink", October 1971, IBM Technical Disclosure Bulletin, Vol. 14, No. 5, page 1425.			
TD	BK	"Cold Plate for Thermal Conduction Module with Inlet for Cooling Water Near Highest Power Chips", IBM Technical Disclosure Bulletin, Vol. 30, No. 5, October 1987, page 413.			
TD	BL	"Circuit Module Cooling with Coaxial Bellow Providing Inlet, Outlet and Redundant Connections to Water-Cooled Element", IBM Technical Bulletin, Vol. 30, No. 5, October 1987, pages 345-347.			
TD	BM	"Piping System with Valves Controlled by Processor for Heating Circuit Modules in a Selected Temperature Profile for Sealing Integrity Test Under Temperature Stress", IBM Technical Disclosure Bulletin, Vol. 30, No. 5, October 1987, page 336.			
TD	BN	"Cooling System for Chip Carrier on Card", IBM Technical Disclosure Bulletin, Vol. 31, No. 4, September 1988, pages 39-40.			
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TD	BP	W. E. Ahearn et al., "Silicon Heat Sink Method to Control Integrated Circuit Chip Operating Temperatures", IBM Technical Disclosure Bulletin, Vol. 21, No. 8, January 1979, pages 3378-3380.			
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TD	BR	W. J. Kleinfelder et al., "Liquid-Filled Bellows Heat Sink", IBM Technical Disclosure Bulletin, Vol. 21, No. 10, March 1979, pages 4125-4126.			
TD	BS	R. P. Chrisfield et al., "Distributed Power/Thermal Control", IBM Technical Disclosure Bulletin, Vol. 22, No. 3, August 1979, pages 1131-1132.			
TD	BT	A. J. Arnold et al., "Heat Sink Design for Cooling Modules in a Forced Air Environment", IBM Technical Disclosure Bulletin, Vol. 22, No. 6, November 1979, pages 2297-2298.			
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TD	BX	R. C. Chu et al., "Silicon Heat Sink for Semiconductor Chip", IBM Technical Disclosure Bulletin, Vol. 24, No. 11A, April 1982, page 5743.			
TD	BY	J. M. Eldridge et al., "Heat-Pipe Vapor Cooling Etched Silicon Structure", IBM Technical Disclosure Bulletin, Vol. 25, No. 8, January 1983, pages 4118-4119.			
TD	BZ	J. R. Skobern, "Thermoelectrically Cooled Module", IBM Technical Disclosure Bulletin, Vol. 27, No. 1A, June 1984, page 30.			
TD	CA	M. J. Brady et al., "Etched Silicon Integrated Circuit Heat Sink", IBM Technical Disclosure Bulletin, Vol. 27, No. 1B, June 1984, page 627.			
TD	CB	H. D. Edmonds et al., "Heat Exchange Element for Semiconductor Device Cooling", IBM Technical Disclosure Bulletin, Vol. 23, No. 3, August 1980, page 1057.			
TD	CC	R. W. Noth, "Heat Transfer from Silicon Chips and Wafers", IBM Technical Disclosure Bulletin, Vol. 17, No. 12, May 1975, page 3544.			
TD	CD	"Forced Boiling Cooling System with Jet Enhancement for Critical Heat Flux Extension", IBM Technical Disclosure Bulletin, Vol. 39, No. 10, October 1996, page 143.			
Examiner: <i>Shawna</i>			Date Considered: 8/21/06		
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TD	CE	"Miniature Heat Exchanger for Corrosive Media", IBM Technical Disclosure Bulletin, Vol. 38, No. 01, January 1995, pages 55-56.					
TD	CF	"Self-Contained Active Heat Dissipation Device", IBM Technical Disclosure Bulletin Vol. 39, No. 04, April 1996, pages 115-116.					
TD	CG	B. J. Ronkese, "Centerless Ceramic Package with Directly Connected Heat Sink", IBM Technical Disclosure Bulletin, Vol. 20, No. 9, February 1978, page 3577-3578.					
TD	CH	K. S. Sachar, "Liquid Jet Cooling of Integrated Circuit Chips", Vol. 20, No. 9, February 1978, pages 3727-3728.					
TD	CI	A. H. Johnson, "Device Cooling", IBM Technical Disclosure Bulletin, Vol. 20, No. 10, March 1978, pages 3919-3920.					
TD	CJ	A. L. Pacuzzo et al., "Integrated Circuit Module Package Cooling Structure", IBM Technical Disclosure Bulletin, Vol. 20, No. 10, March 1978, pages 3898-3899.					
TD	CK	R. D. Durand et al., "Flexible Thermal Conductor for Electronic Module", IBM Technical Disclosure Bulletin, Vol. 20, No. 11A, April 1978, page 4343.					
TD	CL	D. Balderes et al., "Liquid Cooling of a Multichip Module Package", IBM Technical Disclosure Bulletin, Vol. 20, No. 11A, April 1978, pages 4336-4337.					
TD	CM	J. A. Dorler et al., "Temperature Triggerable Fluid Coupling System for cooling Semiconductor Dies", IBM Technical Disclosure Bulletin, Vol. 20, No. 11A, April 1978, pages 4386-4388.					
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TD	CP	A. J. Arnold, "Electronic Packaging Structure", IBM Technical Disclosure Bulletin, Vol. 20, No. 11B, April 1978, pages 4820-4822.					
TD	CQ	V. Y. Doo et al., "High Performance Package for Memory", IBM Technical Disclosure Bulletin, Vol. 21, No. 2, July 1978, pages 585-586.					
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TD	CT	"Circuit Module Cooling with Multiple Pistons Contacting a Heat Spreader/Electrical Buffer Plate in Contact with Chip", IBM Technical Disclosure Bulletin, Vol. 31, No. 12, May 1989, page 5-7.					
TD	CU	"TCM-LIKE Circuit Module with Local Heat Sink Resting on Chip and Chip Separated From Coolant by Bellows with Pins and Deflector Plate Attached to Local Heat Sink and Extending Above Bellows into Region of Coolant Flow", IBM Technical Disclosure Bulletin, Vol. 31, No. 11, pages 305-306.					
TD	CV	"Water-Cooled Circuit Module with Grooves Forming Water Passages Near Heat-Producing Devices", IBM Technical Disclosure Bulletin, Vol. 31, No. 12, May 1989, pages 49-50.					
TD	CW	"Cold Plate for Thermal conduction Module with Only Peripheral Mounting bolts, Large Surface Area Fin Inserts and Reduced Water Flow and Thermal Resistances", IBM Technical Disclosure Bulletin, Vol. 31, No. 12, May 1989, page 59.					
TD	CX	"Thermal Control Hardware for Accelerated Run-In Testing of Multi-Chip Modules", IBM Technical Disclosure Bulletin, Vol. 32, No. 5A, October 1989, page 129-130.					
TD	CY	"Means of Removing More Heat From a TCM (Or Other Liquid-Cooled Logic Package) By Reducing the Coolant Temperature", IBM Technical Disclosure Bulletin, Vol. 32 No. 5A, Oct 1989, pages 153-154.					
TD	CZ	E. G. Loeffel et al., "Liquid Cooled Module with Compliant Membrane", IBM Technical Disclosure Bulletin, Vol. 20, No. 2, July 1977, pages 673-674.					
TD	DA	V. Y. Doo et al., "Method of Effective Cooling of a High Power Silicon Chip", IBM Technical Disclosure Bulletin, Vol. 20, No. 4, September 1977, page 1436-1437.					
TD	DB	V. Y. Doo et al., "Semiconductor Chip Cooling Package", IBM Technical Disclosure Bulletin, Vol. 20, No. 4, September 1977, pages 1440-1441.					
TD	DC	"Heat Sink Fabrication Method", IBM Technical Disclosure Bulletin, Vol. 27, No. 10A, March 1985, page 5656-5657.					
TD	DD	"Thermal Conduction Module with Liquid Dielectric and Pistons with Surface Treatment for Enhanced Nucleate Boiling", IBM Technical Disclosure Bulletin, Vol. 27, No. 12, May 1985, page 6904.					
TD	DE	"Pin Fin Array Heat Pipe Apparatus", IBM Technical Disclosure Bulletin, Vol. 37, No. 09, September 1994, page 171.					
TD	DF	Youngcheol Joo et al., "Fabrication of Monolithic Microchannels for IC Chip Cooling", 1995, IEEE Micro Electro Mechanical Systems, pages 362-367.					
TD	DG	Haim H. Bau, Optimization of conduits' shape in micro heat exchangers, December 10, 1997, International Journal of Heat and Mass Transfer 41 (1998), pages 2717-2723.					
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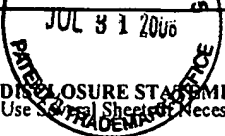
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TD	DH	V. K. Dwivedi et al., <u>Fabrication of very smooth walls and bottoms of silicon microchannels for heat dissipation of semiconductor devices</u> , January 25, 2000, <u>Microelectronics Journal</u> 31 (2000), pages 405-410.		
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TD	DJ	S. F. Choquette, M. Faghri et al., <u>OPTIMUM DESIGN OF MICROCHANNEL HEAT SINKS</u> , 1996, DSC-Vol. 59, <u>Microelectromechanical Systems (MEMS)</u> , ASME 1996, pages 115-126.		
TD	DK	David Copeland et al., <u>MANIFOLD MICROCHANNEL HEAT SINKS: THEORY AND EXPERIMENT</u> , 1995, EEP-Vol. 10-2, <u>Advances in Electronic Packaging ASME</u> 1995, pages 829-835.		
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TD	DN	Charlotte Gillot et al., <u>Integrated Micro Heat Sink for Power Multichip Module</u> , September 3, 1999, <u>IEEE Transactions on Industry Applications</u> , Vol. 36, NO. 1, January/February 2000, pages 217-221		
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TD	DS	Pei-Xue Jiang et al., <u>Thermal-hydraulic performance of small scale micro-channel and porous-media heat-exchangers</u> , 2001, <u>International Journal of Heat and Mass Transfer</u> 44 (2001), pages 1039-1051.		
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TD	DU	David Bazeley Tuckerman, <u>Heat-Transfer Microstructures for Integrated Circuits</u> , February 1984, pages ii-xix, pages 1-141.		
TD	DV	M Esashi, <u>Silicon micromachining for integrated microsystems</u> , 1996, <u>Vacuum/volume 47/numbers 6-8/pages 469-474</u> .		
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TD	DZ	T.S. Ravigururajan, <u>Impact of Channel Geometry on Two-Phase Flow Heat Transfer Characteristics of Refrigerants in Microchannel Heat Exchangers</u> , May 1998, <u>Journal of Heat Transfer</u> , Vol. 120, pages 485-491		
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TD	EC	C. Perret et al., <u>Microchannel integrated heat sinks in silicon technology</u> , October 12-15, 1998, <u>The 1998 IEEE Industry Applications Conference</u> , pages 1051-1055.		
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TD	EF	X.F. Peng et al., <u>Cooling Characteristics with Microchanneled Structures</u> , 1994, <u>Enhanced Heat Transfer</u> , Vol. 1, No. 4, pages 315-326, printed in the United States of America.		
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TD	EH	Yoichi Murakami et al., <u>Parametric Optimization of Multichanneled Heat Sinks for VLSI Chip Cooling</u> , March 2002, <u>IEEE Transaction on Components and Packaging Technologies</u> , Vol. 24, No. 1, pages 2-9.		
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TD	EJ	C.R. Friedrich et al., <u>Micro heat exchangers fabricated by diamond machining</u> , January 1994, Precision Engineering, Vol. 16, No. 1, pages 56-59						
TD	EK	Mali Mahalingam, <u>Thermal Management in Semiconductor Device Packaging</u> , 1985, Proceedings of the IEEE, Vol. 73, No. 9, September 1985, pages 1396-1404.						
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TD	EN	D. Jed Harrison et al., <u>Electroosmotic Pumping Within A Chemical Sensor System Integrated on Silicon</u> , Session C9 Chemical Sensors and Systems for Liquids, June 26, 1991, pages 792-795.						
TD	EO	Gh. Mohiuddin Mala et al., <u>Flow characteristics of water through a microchannel between two parallel plates with electrokinetic effects</u> , 1997, Int. J. Heat and Fluid Flow, Vol. 18, No. 5, pages 489-496						
TD	EP	Stephanus Buttgenbach et al., <u>Microflow devices for miniaturized chemical analysis systems</u> , November 4-5, 1998, SPIE-Chemical Microsensors and Applications, Vol. 3539, pages 51-61.						
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TD	EX	Xiaoqing Yin et al., <u>Micro Heat Exchangers Consisting of Pin Arrays</u> , 1997, Journal of Electronic Packaging March 1997, Vol. 119, pages 51-57.						
TD	EY	X. Yin et al., <u>Uniform Channel Micro Heat Exchangers</u> , 1997, Journal of Electronic Packaging June 1997, Vol. 119, No. 2, pages 89-94.						
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TD	FC	B. X. Wang et al., <u>Experimental investigation on liquid forced-convection heat transfer through microchannels</u> , 1994, Int. J. Heat Mass Transfer, Vol. 37 Suppl. 1, pages 73-82.						
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TD	FE	Gokturk Tune et al., <u>Heat transfer in rectangular microchannels</u> , 2002, Int. J. Heat Mass Transfer, 45 (2002), pages 765-773.						
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TD	FH	David S. Shen et al., <u>Micro Heat Spreader Enhance Heat Transfer in MCMs</u> , 1995, IEEE Multi-Chip Module Conference, pages 189-194.						
TD	FI	S. Sasaki et al., <u>Optimal Structure for Microgrooved Cooling Fin for High-Power LSI Devices</u> , Electronic Letters, December 4, 1986, Vol 22, No. 25.						
TD	FJ	Vijay K. Samalam, <u>Convective Heat Transfer in Microchannels</u> , September 1989, Journal of Electronic Materials, Vol. 18, No. 5, pages 611-617.						
TD	FK	Sanjay K. Roy et al., <u>A Very High Heat Flux Microchannel Heat Exchanger for Cooling of Semiconductor Laser Diode Arrays</u> , 1996, IEEE Transactions on components, packaging, and manufacturing technology-part B, Vol. 19, No. 2, pages 444-451.						
Examiner:		<i>Shawna</i>			Date Considered:			8/21/06
EXAMINER: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.								

FORM PTO-1449 (Modified)		U.S. Department of Commerce Patent and Trademark Office	Attorney Docket No.: COOL-01400	Serial No.: 10/612,241
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use Several Sheets If Necessary)			Applicants: James Lovette et al.	
			Filing Date: July 1, 2003	Group Art Unit: 3743
(37 CFR § 1.98(b))				
OTHER DOCUMENTS (Including Author, Title, Date, Relevant Pages, Place of Publication)				
TD	FL	Charlotte Gillot et al., Integrated Single and Two-Phase Micro Heat Sinks Under IGBT Chips, IEEE Transactions on Components and Packaging Technology, Vol. 22 No. 3, September 1999, pages 384-389.		
TD	FM	H. Krumm "Chip Cooling", IBM Technical Disclosure Bulletin, Vol. 20, No. 7, December 1977, pg. 2728.		
TD	FN	Jae-Mo Koo et al., "Modeling of Two-Phase Microchannel Heat Sinks for VLSI Chips", Mech. Eng. Depart. of Stanford University, pp. 422-426.		
	FO			
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Examiner: <i>Thompson</i>		Date Considered: 8/21/06		
EXAMINER:		Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.		

FORM PTO-1449 (Modified)		U.S. Department of Commerce Patent and Trademark Office		Attorney Docket No.: COOL-01400		Serial No.: 10/612,241	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use Several Sheets If Necessary)				Applicants: James Lovette et al.			
(37 CFR § 1.98(b))				Filing Date: July 1, 2003		Group Art Unit: 3743	
U.S. PATENT DOCUMENTS							
Examiner Initials		Serial / Patent Number	Issue Date	Applicant / Patentee	Class	Subclass	Filing Date
	AA						
	AB						
	AC						
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	AE						
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FOREIGN PATENTS OR PUBLISHED FOREIGN PATENT APPLICATIONS							
		Document Number	Publication Date	Country / Patent Office	Class	Subclass	Translation
							Yes    No
TD	AK	DE 197 10 716 C2	09/24/98	DE	H01S	5/024	
TD	AL	WO 01/25711 A1	04/12/01	PCT	F28F	3/04	
	AM						
	AN						
	AO						
OTHER DOCUMENTS (Including Author, Title, Date, Relevant Pages, Place of Publication)							
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Examiner: <i>Shammy</i>				Date Considered: 8/21/02			
EXAMINER: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.							



FORM PTO-1449 (Modified)				U.S. Department of Commerce Patent and Trademark Office		Attorney Docket No.: COOL-01400		Serial No.: 10/612,241	
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> (Use Separate Sheet if Necessary)						Applicants: James Lovette et al.			
(37 CFR § 1.98(b))						Filing Date: July 1, 2003		Group Art Unit: 3753	
<b>U.S. PATENT DOCUMENTS</b>									
Examiner Initials	Serial / Patent Number	Issue Date	Applicant / Patentee	Class	Subclass	Filing Date			
TD	AA	4,494,171	01/15/85	Bland et al.	361	386	08/24/82		
TD	AB	5,145,001	09/08/92	Valenzuela	165	164	04/23/91		
TD	AC	6,131,650	10/17/00	North et al.	165	170	07/20/99		
TD	AD	6,196,307 B1	03/06/01	Ozmat	165	185	06/17/98		
TD	AE	6,508,301 B2	01/21/03	Marsala	165	80.4	04/17/01		
TD	AF	US 2004/0112571 A1	06/17/04	Kenny et al.	165	80.3	10/30/03		
TD	AG	US 2005/0168949 A1	08/04/05	Tilton et al.	361	699	01/30/04		
	AH								
	AI								
	AJ								
<b>FOREIGN PATENTS OR PUBLISHED FOREIGN PATENT APPLICATIONS</b>									
		Document Number	Publication Date	Country / Patent Office	Class	Subclass	Translation		
							Yes	No	
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	AN								
	AO								
<b>OTHER DOCUMENTS (Including Author, Title, Date, Relevant Pages, Place of Publication)</b>									
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	AZ								
Examiner: <i>Shammy</i>					Date Considered: 8/21/06				
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# ELECTRONIC INFORMATION DISCLOSURE STATEMENT

Electronic Version v18

Stylesheet Version v18.0

7/10/06

## Title of Invention

MULTI-LEVEL MICROCHANNEL HEAT EXCHANGERS

Application Number : 10/612241  
Confirmation Number: 3319  
First Named Applicant: James Lovette  
Attorney Docket Number:  
Art Unit:  
Examiner:  
Search string: ( 5417280 ).pn



Certification: This Information Disclosure Statement was submitted under the following conditions, which satisfies the requirement under 37 CFR 1.97(e). The filer certified:

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement.

## US Patent Documents

**Note:** Applicant is not required to submit a paper copy of cited US Patent Documents

init	Cite.No.	Patent No.	Date	Patentee	Kind	Class	Subclass
TD	1	5417280	1995-05-23	Hayashi et al.			

## Signature

Examiner Name	Date
<i>Shawna</i>	8/21/06

# ELECTRONIC INFORMATION DISCLOSURE STATEMENT

2/1/05

Electronic Version v18

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## Title of Invention

MULTI-LEVEL MICROCHANNEL HEAT EXCHANGERS

Application Number : 10/612241  
Confirmation Number: 3319  
First Named Applicant: James Lovette  
Attorney Docket Number:  
Art Unit:  
Examiner:  
Search string: ( 6438984 or 6581388 or 6587343 ).pn



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That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement.

## US Patent Documents

**Note:** Applicant is not required to submit a paper copy of cited US Patent Documents

init	Cite.No.	Patent No.	Date	Patentee	Kind	Class	Subclass
M	1	6438984	2002-08-27	Novotny et al.	B1		
M	2	6581388	2003-06-24	Novotny et al.	B2		
M	3	6587343	2003-07-01	Novotny et al.	B2		

## Signature

Examiner Name	Date
	8/21/05

1/26/05

# ELECTRONIC INFORMATION DISCLOSURE STATEMENT

Electronic Version v18

Stylesheet Version v18.0

<b>Title of Invention</b>	<b>MULTI-LEVEL MICROCHANNEL HEAT EXCHANGERS</b>
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Application Number : 10/612241

Confirmation Number: 3319


First Named Applicant: James Lovette

Attorney Docket Number:

Art Unit:

Examiner:

Search string: ( 2039593 or 4574876 or 6206022 or 6253835 or 6437981 ).pn



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**US Patent Documents**

**Note: Applicant is not required to submit a paper copy of cited US Patent Documents**

init	Cite.No.	Patent No.	Date	Patentee	Kind	Class	Subclass
TD	1	2039593	1936-05-05	T. N. Hubbuch et al.			
TD	2	4574876	1986-03-11	Aid			
TD	3	6206022	2001-03-27	Tsai et al.	B1		
TD	4	6253835	2001-07-03	Chu et al.	B1		
TD	5	6437981	2002-08-20	Newton et al.	B1		

**Signature**

Examiner Name	Date
	8/21/05

5/5/05

# ELECTRONIC INFORMATION DISCLOSURE STATEMENT

Electronic Version v18

Stylesheet Version v18.0

<b>Title of Invention</b>	<b>MULTI-LEVEL MICROCHANNEL HEAT EXCHANGERS</b>
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Application Number : 10/612241

Confirmation Number: 3319


First Named Applicant: James Lovette

Attorney Docket Number:

Art Unit:

Examiner:

Search string: ( 5316077 or 6167948 or 6606251 or 20030062149 ).pn



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**US Patent Documents**

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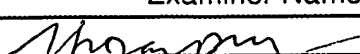
init	Cite.No.	Patent No.	Date	Patentee	Kind	Class	Subclass
10	1	5316077	1994-05-31	Reichard			
10	2	6167948	2001-01-02	Thomas	B1		
10	3	6606251	2003-08-12	Kenny, Jr. et al.	B1		

**US Published Applications**

**Note: Applicant is not required to submit a paper copy of cited US Published Applications**

init	Cite.No.	Pub. No.	Date	Applicant	Kind	Class	Subclass
10	1	20030062149	2003-04-03	Goodson et al.	A1		

**Signature**

Examiner Name	Date
	8/21/06